

REMARKS

The Applicants appreciate the thoroughness with which the subject application has been examined. By this amendment, certain claims have been amended as set forth above to overcome the Examiner's rejections and more concisely claim and describe the present invention. New claim 14 has been added. Claims 1-14 remain in the application for reconsideration by the Examiner. The Examiner's allowance of all pending claims is earnestly solicited.

The Applicants acknowledge the restriction requirement and appreciate the Examiner's examination of all claims in the application, including those previously withdrawn from consideration.

The Applicants propose to correct the reference numerals 144 and 145 in Figures 3 and 4 as indicated in the proposed replacement sheet 5/7 attached as Attachment A.

Within the first claim set, claims 1 and 2 stand rejected under Section 103(a) as unpatentable over Xu (5,841,624) in view of Frankel (6,106,630) and Patadia (6,146,504). Claim 3 apparently stands rejected as unpatentable over Xu, Frankel, Patadia and the applicant's admitted prior art. It is noted that paragraph 18 of the Office Action refers to the rejection of claim 2, but appears to relate instead to the rejection of claim 3. Thus the Applicants assume that paragraph 18 sets forth the claim 3 rejection.

To further distinguish the invention over the cited art, the Applicants have amended the second paragraph of claim 1 to "a removable pedestal cover overlying the upper surface and extending beyond the sidewalls, the pedestal cover defining a peripheral circumferential groove therein and comprising a planar upper surface in a region overlying the chuck and a concave lower surface for receiving the chuck therein." Support for the removable limitation can be found in paragraph [0043] of the application. Support for the additional textual amendments can be found in Figures 8 and 9 and the accompanying text in paragraphs [0040] and [0041].

Xu discloses that "the key feature of the invention is that the wafer [120] is supported in a spaced-apart relation to the surface of the chuck [110] by conductive pads [102] within the cover layer [100]." See Xu's Figure 1, where the spaced-apart distance between the lower surface of the wafer and the upper surface of the chuck is identified by a reference character 124. This distance should be larger than the expected diameter of contaminant particles that may lie on the surface

of the cover layer. The contaminant particles thus do not adhere to the underside of the wafer during processing. See column 2, lines 25-29. Further, “the underside [122] of the wafer 120 contacts the top surface 106 of each conductive pad 102 and a portion of insulating material 108 proximate each conductive pad 102.”

The Xu chuck 110 comprises an electrostatic chuck as set forth in line 30 of column 3. The conductive pads are deposited by sputtering on the support surface 112. See column 4 at lines 62-66.

Frankel is not an electrostatic chuck. In fact, Frankel’s protective layer 500 (see Figure 8A) overlying the pedestal is specifically intended to avoid electrostatic attraction of the wafer to the pedestal. See column 3 at lines 12-16 and column 11 at line 30. As stated at column 2, lines 43 and 44, “the pedestal includes a protective layer substantially covering and adhered to the wafer support surface.”

Patadia’s substrate support is designed to reduce “material deposition on and/or scratching of the backside of the substrate” that can cause “adhesion of the substrate to the support member.” Patadia does not disclose a substrate cover.

The combination of the three cited references does not disclose the Applicant’s invention as set forth in amended claim 1. Even if the combination was permitted, the references do not disclose all elements of claim 1, e. g, there is no disclosure of a removable pedestal cover among the three references.

There is no motivation to combine Xu and Frankel since the key objective of the latter is to avoid the key component of the former, i.e., electrostatic attraction between the pedestal or chuck and the wafer substrate holds Xu’s wafer in place, while Frankel seeks to avoid electrostatic attraction. The references teach away from each other and therefore cannot be combined.

The conductive pads of the pedestal cover of Xu cannot be applied to Patadia as such would defeat a key Patadia objective. A key feature of the resting and lifting mechanism of Patadia is to minimize friction and movement between the backside of the substrate and the support pins. See Patadia column 6 at lines 29-31. Thus Patadia discloses arcuate upper surfaces for the lift pins. At column 6, lines 44-48, Patadia states, “the radius of the arcuate portion 154 is optimized so that the space 153 between the backside of the substrate and the arcuate portion of

the support pin is minimized while at the same time keeping to a minimum the area 155 of the backside of the substrate in contact with the support pin.”

In contrast, Xu discloses planar upper surfaces for the pads 102, the surfaces maximize contact area between the backside of the substrate and the pad upper surfaces. Since the Xu and Patadia references teach away from each other, there can be no basis or motivation for combining them.

Motivation to combine Frankel and Patadia is also lacking since Frankel discloses a cover that adheres to the pedestal including over the pedestal sidewalls, but Patadia’s sidewalls are not amenable to application of a cover since the Patadia pedestal peripheral region extends beyond the pedestal sidewalls. Thus a Frankel cover would not fit and adhere to the Patadia pedestal.

It appears that the Examiner has employed impermissible hindsight reasoning to reject the Applicant’s claim 1 over the cited references, using the claims as a blueprint and then selecting only so much of the elements from each reference as would support a given position, to the exclusion of other parts necessary for a full appreciation of what the references fairly suggest to one skilled in the art.

Further, there is no disclosure as to how the combination can be made workable. For example, to merely suggest, as the Examiner has done in paragraph 9 of the Office Action, that it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Xu’s pedestal cover extending beyond the chuck sidewalls in order to protect all areas of the chuck as taught by Frankel, does not render the combination workable as it neglects consideration of the processes by which Xu’s pedestal cover was made, that is, by material deposition on the upper surface of Xu’s pedestal. Thus it is not possible to extend Xu’s cover beyond the pedestal sidewalls because in fact the cover requires support from and is formed on the pedestal upper surface.

Each of the dependent claims 2 and 3 depending from claim 1 further distinguish the invention over the art of record and therefore are deemed to be in condition for allowance.

Independent claim 4 and dependent claim 5 stand rejected under Section 103(a) as unpatentable over Xu in view of Frankel.

To further distinguish the invention over the cited art, the Applicants have amended the second paragraph of claim 4 to “a removable pedestal cover supported by the upper surface . . .

“ Neither Xu nor Frankel nor the combination teaches a “removable” pedestal cover as both are formed on the pedestal by subjecting the pedestal to certain deposition and/or sputtering steps. Further, Xu and Frankel are not combinable for the reasons set forth above.

Dependent claim 5 further distinguishes the invention over the art of record and therefore are deemed to be in condition for allowance.

Independent claim 6 and dependent claims 7 and 9 stand rejected under Section 103(a) as unpatentable over Xu in view of Frankel and Patadia. Dependent claim 8 stands rejected under Section 103(a) as unpatentable over Xu in view of Frankel and Patadia and further in view of Burkhardt (5,656,093).

The remarks set forth above as to the improper combination of Xu, Frankel and Patadia also apply to the rejection of claim 6-9. Further none of the references disclose “a disk defining a peripheral circumferential trench therein and downwardly directed sidewalls extending from a bottom surface thereof” as set forth in claim 6. Thus the Applicants suggest that independent amended claim 6 and dependent claims 7-9, which further distinguish the invention over the art of record, are allowable.

Independent claim 10 and dependent claims 11 and 13 stand rejected under Section 103(a) as unpatentable over Xu in view of Frankel. Dependent claim 12 stands rejected under Section 103(a) as unpatentable over Xu in view of Frankel and Patadia and further in view of Burkhardt.

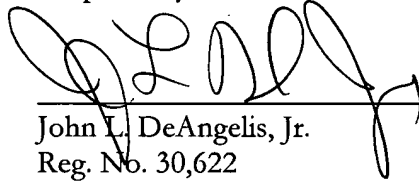
The remarks set forth above as to the improper combination of Xu and Frankel also apply to the rejection of claims 10-13. Further none of the references disclose “such that during the deposition process the chuck may be removably disposed within the opening” as set forth in amended claim 10. Thus the Applicants suggest that independent amended claim 10 and dependent claims 11-13, which further distinguish the invention over the art of record, are allowable.

Claim 14 has been added. Support for this claim is found in paragraphs [0039] and [0040]. The claim is believed to be allowable over the cited art as the art is not combinable, as set explained above, and in particular, does not disclose or suggest, “disposing a pedestal cover over an upper surface of the chuck, the cover defining a peripheral circumferential trench therein.”

The Applicants have attempted to comply with all of the points raised in the Office Action and it is believed that the remaining claims 1-14 in the application are now in condition for allowance. In view of the foregoing amendments and discussion, it is requested that the Examiner's claim rejections have been overcome. It is respectfully requested that the Examiner reconsider these rejections and objections and issue a Notice of Allowance for all the claims pending in the application.

If a telephone conference will assist in clarifying or expediting this Amendment, the Examiner is invited to contact the undersigned at the telephone number below.

Respectfully submitted,



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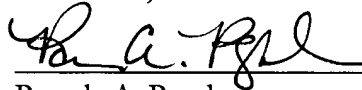
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CERTIFICATE OF MAILING

I HEREBY CERTIFY that the foregoing Amendment is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 22nd day of November 2005.



Pamela A. Pagel

ATTACHMENT A
PROPOSED AMENDMENTS TO FIGURES 3 AND 4 (SHEET 3/7)